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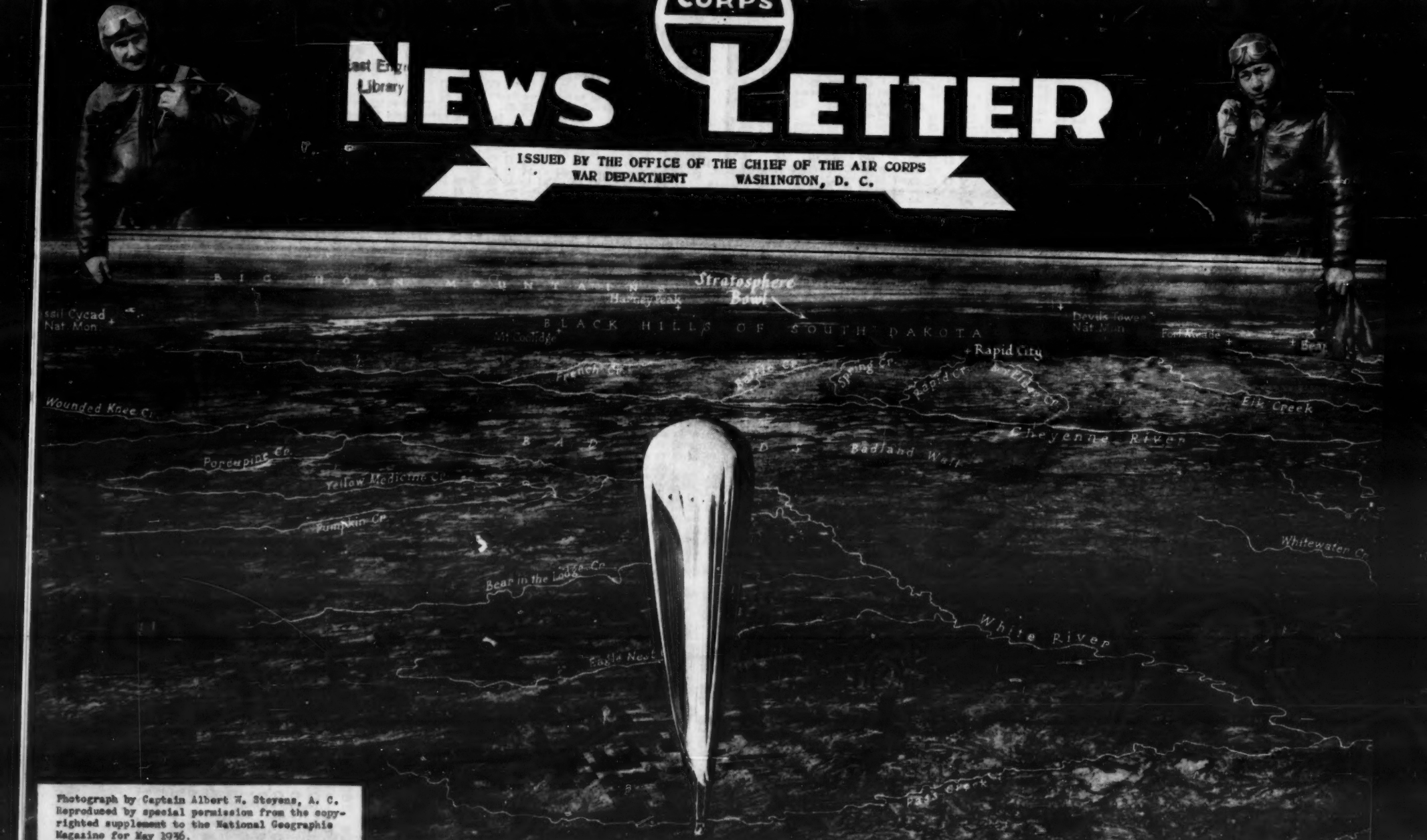

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VOL. XIX MAY 1, 1936 NO. 9

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NEWS-LETTER

VOL. XIX AIR CORPS NEWS LETTER NO. 9.
Information Division, Air Corps — May 1, 1936 — Munitions Building, Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

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THE STRATOSPHERE FLIGHT

The following extracts are made from the report of Captain Albert W. Stevens, Air Corps, on the flight of the Explorer II, and the annexes thereto, prepared by Captains Orvil A. Anderson and Randolph P. Williams, Air Corps:

Captain Stevens' Report

* * The fabric of the Explorer I was the best selected long staple cotton, largely 3 ounces in weight, with a 2-ounce bottom. In the Explorer II, the bottom fabric was made 3 ounces and that portion from the upper catenary to the crown point of the balloon, which had been 3 ounces weight in Explorer I, was made 4 ounces in weight in the Explorer II.

It was decided to so fold the balloon that the bottom fabric would not be folded upward into the fabric of the upper part of the balloon. The balloon was therefore folded and shipped with the bottom fabric completely extended.

As a further precaution the fabric of the balloon Explorer II was pigmented with white material on both sides to prevent the possibility of adhesions. In the Explorer I the inside of the balloon was rubberized with unpigmented rubber which was to some extent "tacky," The outside of the fabric of Explorer I was coated with white pigmented rubber. The fabric of Explorer II was coated with rubber white pigmented on both sides.

These changes in folding and pigmentation completely did away with certain troubles that occurred in handling the Explorer I.

In addition, a further change was made in the rigging of the balloon, by the substitution of webbing in place of the manila ropes used in 1934. It was noticed that the manila ropes twisted together when load was applied to them, and that they untwisted with great reluctance and in some cases not at all. The use of webbing in the flight of Explorer II did away with this kind of trouble; no twisting occurred of the form where one webbing twisted with another.

It was decided to use three appendices on the Explorer II, of sufficient size to insure ready discharge of gas when the balloon would be full and still be rising. It was decided that several appendices of moderate size were better than a single large one.

No change was considered necessary in the design of the pneumatically operated balloon valves. It was decided to abandon entirely the use of a rope actuated valve such as was used on the Explorer I, and to use two pneumatically operated valves such as the one previously used in connection with the rope actuated valve referred to. It was felt that one such valve was sufficient for operation of the balloon, and that the second valve should be installed simply as a safety measure. **

Arrangements were made with the Commanding Officer at Fort Meade to furnish at the proper time nearly 200 soldiers for duty on the day of inflation. He assigned to the camp a Medical officer and two Hospital Corps men, and an Army ambulance was provided. An officer from Fort Meade was assigned to take charge of the Cavalry detachment. The Fort Meade organization functioned perfectly. Without its valuable assistance and cooperation a stratosphere flight from Rapid City would be impracticable. * * *

Too much praise cannot be given to the Cavalry Detachment at this time, to the scientists, and to the civilian personnel, in making the best of what may have been regarded as a disagreeable situation. Although these men were sleeping and eating in Army tents intended primarily for summer use, they went about their duties without comment and maintained a high degree of optimism. The morale of the camp was excellent at all times.

Prior to November 10, the snow had been removed as fast as it fell. Some snow had fallen on November 9th, and a few men worked all night with scrapers to remove the last light snowfall. On November 10, the weather conditions, in the opinion of Captain Williams as meteorological officer and Captain Anderson as pilot, was so good that preparations were made for inflation early in the morning. By afternoon the balloon envelope had been taken from its box, spread on the ground, and prepared for the admission of gas. As in July, inflation progressed with remarkable freedom from confusion until 20,000 cubic feet had been admitted.

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The balloon had been kept in the box in which it was shipped from the factory and this box had been kept in a tent heated by small oil stoves with a view to maintaining the balloon at a temperature between 40 and 50 degrees Fahrenheit. When the box was opened the balloon fabric was fairly warm and flexible. On exposure to the near zero temperature of the Stratobowl the fabric soon stiffened and it was found that it was somewhat more difficult to inflate it than had been the case in July. However, no appreciable difficulty occurred in the laying out of the balloon, nor was the time for spreading it out extended.

Shortly after inflation was started, when approximately 20,000 cubic feet of helium had been admitted, a slight noise occurred that indicated that a burst had taken place in the fabric somewhere under the top of the bag. The balloon was allowed to rise by the admission of still more gas; inspection of it was started, as it rose, to find the rip. The rip was finally located; it proved to be a lateral rip 17 feet in length, located in the panel immediately below the equator line of the balloon. The rip was due entirely to a lock in the fabric of the balloon. Such an accident is entirely preventable in the future by the introduction of still another filling appendix located just under the upper catenary band of the balloon. Such an appendix, easily visible, and readily accessible, would on another inflation insure a smooth, unobstructed passage of gas directly into the top of the balloon, without possibility of a lock forming.

The gondola was attached, and still more helium was admitted until it lifted the weight of the gondola, its instruments, and the necessary ballast. The take-off had been planned for 5:30 a.m., but to the delay caused by the accident, the actual take-off was at 7:01 a.m.***"

Captain Anderson's Report

" * * * At take-off an eight-mile wind from the northwest was blowing across the rim of the inflation bowl, about 500 feet above the inflation bed. No wind was being registered in the bowl or evidenced on the bag now extending about 320 feet above the ground. To offset as much as possible the action of this rim wind on the balloon while clearing the surrounding hills, the balloon was maneuvered to the northwest corner of the floor of the bowl. It was then trimmed light about 700 pounds to effect a rapid rise. These steps were considered ample to insure protection to the balloon while rising out of the bowl. On being released by the maneuvering crew the balloon rose quite rapidly and was apparently clearing the rim by a wide margin when it came to a rather abrupt stop at an elevation about 100 feet above the rim, and started to descend. Because of the balloon's proximity to the cliffs surrounded the side of the bowl toward which the balloon was then drifting, ballast was expended quite freely to stop this descent; 800 pounds of lead shot being discharged. The descent was stopped after a loss in altitude of 50 feet. There was available for immediate discharge an additional 2,250 pounds of lead ballast if needed. With this available ballast the situation through which the balloon passed at this time did not endanger the flight. While no wind was noticed on the top of the gondola it is concluded that this sudden stop and descent of the balloon was caused by the dynamic action on the top of the bag of a strong downdraft of turbulent air. **

A rate of rise of approximately 600 feet per minute was maintained to an altitude of 16,500 feet, which was reached at 7:30 a.m. At this altitude the balloon was brought to rest while a complete inspection was made of rigging and controls from the outside of the gondola, followed by a check of ballast used. A complete inspection and check of apparatus inside was then made. When this work was completed the man-hole doors were sealed, and the air repurifying apparatus put into operation. Frequent valving was necessary during the period of stay at this altitude to offset the increase and lift through superheating. * * * No more ballast was released until pressure ceiling was reached at an indicated altitude of 65,000 feet. The bag in rising to this height slowly increased its rate of ascent until a maximum of about 600 feet per minute was gained.**

The ceiling was reached at 10:50 a.m. The indicated altitude, with instrument correction applied, was then 73,000 feet. We remained at this approximate altitude for one hour and thirty minutes. During this time with the outside air remaining approximately at -60° C. the temperature of the gas increased from -20° C. to 0° C. as indicated by the visual thermometer hanging eighty feet below the top of the balloon bag. It is believed that this thermometer, due to its nearness to the bag surface indicated temperatures higher than the mean temperature of the gas. * * *

At 12:20 p.m. the balloon was valved to start the return to earth. A very generous release of gas was needed to start a positive descent, and very frequent valving thereafter to keep the balloon descending at a rate of about 300 feet per minute for the first 30,000 feet. During the periods when the valves were closed the rate of descent would slowly decrease. With more time available for descent through the stratosphere this descent could be made with less loss of gas.

The valves were opened for the last time around 40,000 feet. After passing this altitude the balloon, now entering

the troposphere, began to lose superheat and, for about 5,000 feet, maintained a uniform rate of descent of about 400 feet per minute and then began losing lift at an ever increasing rate.

Ballast was first discharged at 34,000 feet on the descent to earth. From this altitude to the ground approximately 1,900 pounds of ballast was expended to keep the descent in check. The maximum rate of fall never exceeded 800 feet per minute. * * *

The gondola ports were opened at 16,000 feet. At 10,000 feet the rate of descent was gradually decreased, bringing the balloon almost to rest at 2,000 feet above the ground. From this altitude to the landing, the rate of fall was kept very low until the drag rope reached the ground. The further descent was checked, and this altitude was maintained until the balloon had drifted past the possible hazard of a grove of trees and farm buildings, when, with a suitable field ahead, it was allowed to settle slowly and ripped just before the gondola touched the ground. The rip, tearing laterally around the cap of the balloon, resulted in immediate deflation of the bag. * * * "

Captain Williams' Report

" * * The need for an accurate weather service was recognized by the sponsors and the flight personnel and had been demonstrated in past expeditions. The exacting weather requirements of stratosphere ballooning demand a forecasting service of the most complete type, capable of foreseeing approximately thirty hours in advance the weather which will prevail over an area of several states. Such a service was organized and installed at the Stratocamp in a field weather station that functioned throughout the occupation of the camp. * * For the flight the sky should be clear, for photographic purposes and because the presence of clouds penalizes the performance of the balloon.

For landing the sky should also be clear and the ground wind should not exceed 14 MPH.

To forecast such weather a day or more in advance requires the reception of a tremendous volume of weather data, the utilization of this data on many maps and charts, long hours of station operation and modern methods of air mass analysis. Such a proceedure was followed in the Bowl. * * *

It was evident that the situation which offers the greatest security during inflation and flight was that which occurs when a large, cold, dry, Polar air mass, creating a high pressure area, moves into the United States and centers during the inflation period over Rapid City. This condition must produce an almost calm in the Stratobowl during the inflation and be followed by ideal flight conditions. Any other weather situation would be less favorable and therefore less consistent with maximum safety. The policy was therefore early adopted of waiting for this condition, which previous study of the climatic records had shown to occur during every summer and fall. This policy was supported by the sponsors, the flight personnel and all members of the expedition. * * "

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NAVIGATION CLASS COMPLETES COURSE

April 1st found another navigation class completing the prescribed course in the Ninth Bombardment Group Navigation school at Mitchel Field, N.Y. Air Corps officers who completed the navigation course on the date mentioned were Captains J.F. Olive, P.H. Johnston, J.K. DeArmond and Lieut. C.B. Dougher. A graduation flight to Miami, Fla., and return, which involves an over-water "hop" from Diamond Shoal lightship to Jacksonville, or a distance of 407 miles, is projected.

The third class of the year, consisting of Captains Laubach, Eaton, Lieuts. Neely and Hutchison, started the navigation course shortly following the termination of the preceding one.

During March, a lecture on celestial navigation was given at the Hayden Planetarium in New York City by Mr. William Barton, associate curator. It is believed that this is the first time a Planetarium has been used as a navigation class room. Practically all the officers of Mitchel Field and a great many of their wives attended.

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NEW CONCRETE APRON FOR SCOTT FIELD

WPA workmen commenced work on April 1st on the new concrete apron for the airplane hangars at Scott Field, Belleville, Ill. This apron will be approximately 1,000 feet long by 100 feet wide, from six to eight inches thick, and reinforced throughout. It will have a concrete drain along the landing field side and will be equipped with three airplane wash racks and a number of gasoline refueling boxes.

The apron will extend from the Operations Office northward along the line of hangars. It will be laid in 25-foot strips, much in the same manner in which a highway is laid.

A railroad spur about 500 feet long has been laid to facilitate the handling of the materials. Forms are now being placed for the apron.

A landscaping project along the west side of Scott Field, adjacent to the new State highway, is practically completed. To date, 200 elm trees and 1000 shrubs of various kinds have been transplanted.

ALBROOK FIELD'S LARGEST REVIEW

ALBROOK Field, Panama Canal Zone, was the scene on April 2, 1936, of the largest review in the history of the Panama Canal Department. Approximately 11,000 troops, all available motor transportation and airplanes participated.

The Review was received by the Honorable Harry H. Woodring, the Assistant Secretary of War, at that time in Panama making an extensive inspection of the Canal Zone and its installations. The 16th Pursuit Group, stationed at Albrook Field, participated as usual on foot, in trucks and in the air. The air echelon of P-12E and P-12F airplanes was commanded by Lieut.-Colonel Charles T. Phillips; the foot troops by Major Warner B. Gates and the motor elements by Captain Flint Garrison, Jr.

The feature of the Review was the presentation of the Department Commander's Trophy for general excellence, which is annually awarded to one unit of each branch of the service. The Air Corps winner this year was the 44th Observation Squadron, commanded by Major Warner B. Gates.

The 19th Composite Wing, Lieut.-Colonel Junius H. Houghton, Commanding, passed in review immediately after the last ground element had cleared the reviewing stand. In the Wing formation were the largest number of airplanes yet to be assembled in the Panama Canal Department for a similar ceremony. First came the O-19 Observation planes, followed by B-6 Bombers, then the P-12 Pursuit planes of the 16th Group and, finally, the B-10B Bombers which had completed on the preceding day the ferry flight from Langley Field to France Field. The B-10's were flown in the Review by the ferrying personnel, commanded by Lieut.-Col. Charles B. Oldfield, and these modern Bombers were easily the "sensation" of the Review. At the conclusion of the Review, the Bombers returned to France Field, while the 16th Pursuit Group landed at Albrook Field.

Both Mr. Woodring and the Department Commander, Major-General Lytle Brown, expressed themselves as being especially pleased with the showing made by the 19th Composite Wing.

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HIGH ALTITUDES AT SCOTT FIELD

The two tallest men at Scott Field. Belleville, Ill., are Private, 1st Class, Earl B. Harden, Station Complement, and Private Cyril R. Shelton, 21st Photo Section, both of whom are six feet, five inches tall. There are over twenty other enlisted men at Scott Field who are over six feet tall.

7TH BOMBARDMENT GROUP GOES INTO CAMP

Bombing training with the 7th Bombardment Group, Hamilton Field, Calif., is not taken lightly. At present, the 9th Bombardment Squadron is engaged in a two weeks' period of intensive training at Mather Field, Sacramento, Calif., formerly the home of the 20th Pursuit Group and, until several years ago, under the command of the present 7th Bombardment Group Commander, Lieut.-Colonel Clarence L. Tinker.

A camp is being maintained at Mather Field by the 69th and 70th Service Squadrons. Each tactical organization undergoes rigorous training for approximately two weeks. Under the provisions of the old TR 440-40, the 11th and 31st Bombardment Squadrons have completed their training. At the conclusion of bombing training by the 9th Squadron, the 31st will again move to Mather Field to renew training under the new TR 440-40 (tentative).

Mather Field is ideally situated and fills a long felt need of the 7th Bombardment Group. Flying conditions are continually in accord with operations, being hot during the day and cold at night.

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A SUCCESSFUL LANDING MINUS WHEELS

Personnel at Hamilton Field, Calif., were recently treated to a bit of unintentional aerial acrobatics when Major Devereux M. Myers, commanding officer of the 70th Service Squadron, brought a B-12 in on its belly.

Major Myers took off from Delno, Calif., on a night mission to Hamilton Field. Arriving after darkness, he prepared to land and found that the left landing gear cable had broken, jamming the gear in a half-down position. Contacting the ground by radio, he informed Lieut.-Col. C.L. Tinker, Hamilton Field commander, of his predicament and prepared to attempt a landing off the mat on the grass and soft earth. However simple it may appear, landing a big ship sans landing gear is not an inviting prospect. Despite the seriousness and danger of the situation, an impressive sight was presented as the big ship glided down through the glare of the flood lights and came to a neat landing. The airplane was only slightly damaged. Privates Reynolds and Henderson were on board the Bomber as radio operator and crew chief, respectively.

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The 72nd Bombardment Squadron, stationed at Luke Field, T.H., aided the National Park Service by sowing Koa seed over the northern half of the Waianae Range from a formation of Bombers recently.

REUNION OF AIR SERVICE WAR VETERANS

The 267th Aero Squadron Association will hold its third annual reunion at Indianapolis, Ind., on Sunday, May 31st, the day following the annual 500-mile automobile race, and a large attendance is anticipated.

Last year, 22 World War veterans, members of the former 267th Aero Squadron, held their reunion in Champaign, Ill., and they took advantage of the nearness of that well known college town to Chanute Field, Rantoul, Ill., where the 267th was formed during the war, to visit the Air Corps Technical School for a tour of inspection and to gain information on the various activities thereat.

It goes without saying that these veterans thoroughly enjoyed the reunion and spent many pleasant hours going over their interesting experiences during the exciting war days of 1917-18. Some of the veterans came from localities over 900 miles distant in order to meet the "Gang."

This year the annual business and "hand-shaking" period will be held at 10:30 a.m., at the old University Club on North Meridian Street, Indianapolis. The annual banquet and entertainment will be held at the Hotel Antlers in the afternoon. Elaborate plans are being made for the banquet and something different in the entertainment line is being arranged.

From Chanute Field, the 267th Aero Squadron went overseas and performed service with the British Royal Air Force at Kent County, England. There are about 150 members of the original squadron who are eligible for membership in the Association. The members are scattered all over the country and, as a result, only 87 have been located. The officers of the Association, Mr. L.K. Handorf, 430 N. Meridian Street, President, and Mr. L.A. Hessey, 3557 Kenwood Avenue, Secretary and Treasurer, both of Indianapolis, are very anxious that news of this next reunion reach as many eligible members as possible. They will greatly appreciate it if former members of the 267th will write to the President or the Secretary.

The first president of the Association was Mr. Lee Stonebreaker, and the first secretary-treasurer, Mr. James Boers, both of Champaign, Ill. These two officers were instrumental in the forming of the Association, and have announced their intention of being present at the coming reunion to help carry along the work of perpetuating the organization.

Members from South Dakota, Minnesota, Pennsylvania, Virginia and Michigan attended the 1935 reunion. Members from California, Texas, West Virginia and Massachusetts, in addition to the States represented last year, have expressed their intention of making this year's pilgrimage to Indianapolis.

Letters addressed to the following members of the 267th were returned, marked Unclaimed."

Albright, Leroy
Bell, J.A.
Blair, W.M.
Blanford, Harold
Bluim, Milton F.
Boyd, William P.
Brodie, John L.
Brokaw, I.A.
Cowan, I.A.
Crinshaw, I.A.
Eade, Ivan C.
Elliott, Don
Elfstrom, Fred G.
Flint, E.M.
Forrest, Kenneth G.
Goodman, Jack
Gunderson, Garfield
Hanham, L.W.
Hanson, Raymond W.
Hasse, Harold
Hathorne, Carl L.
Hayden, R.S.
Hufnagle, Jack
Happy, H.H.
Hayden, R.S.
Holtz, George
Johnson, Joseph
Jordan, Thomas
Jones, J.O.
Kappas, James
Klein, Fred D.
Litlon, George W.
McKittrick, P.B.
McMenamy, William F.
Mishler, Lloyd L.
Mitchell, A.G.
Moffitt, Thomas O.
Morris, Monty
Munier, Laurence N.
McCoy, Paul C.
Neilson, Alfred
Pietsch
Pool, Robert P.
Pope, Girwood N.
Spencer, Harold
Siegel, Henry
Walton, W.F.

It is not beyond the realm of possibility that some readers of the News Letter may be acquainted with and know the whereabouts of one or more of the above-named members of the old 267th, in which event they can perform their daily good deed by taking their pen in hand and dropping a line to one of the officers of the 267th Aero Squadron Association.

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REVIVING THE BLUE MESS JACKET

Officers of the 7th Bombardment Group at Hamilton Field, San Rafael, Calif., are going far in reviving the custom of wearing the blue mess jacket at social functions. Lieut.-Colonel C.L. Tinker, post commander, was the first officer in the Group to wear the mess jacket. His snappy and well dressed appearance prompted other officers to follow his example, and at present approximately 90% of the members of the 7th Group have blue mess jackets.

"It is felt that the color that is added to social functions is of extreme importance in giving the Air Corps the prestige and importance which it deserves, says the Hamilton Field Correspondent.

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The new swimming pool, being built as a part of the WPA project now in progress at Bolling Field, D.C., is in an advanced stage of construction. Concrete, forming the sides of the pool, has been poured and tile is being laid. The pool will be completed for use during the coming season and will probably be the most popular spot on the post.

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PURSUITERS IN PANAMA COMPLETE FIELD TRAINING

THE 16th Pursuit Group, stationed at Albrook Field, Panama Canal Zone, and commanded by Lieut.-Col. Charles T. Phillips, Air Corps, completed its annual period of field training on March 27, 1936, after operating for approximately two weeks on the temporary airdrome at Aguadulce, Republic of Panama.

The 16th Group, as a component of the 19th Composite Wing (less 44th Observation Squadron), operated as a part of the Red Force which was assumed to have effected the landing in the Foncesca Bay region and at Aguadulce, and was advancing with a mission of capturing, without destroying, the Panama Canal.

The 11th Engineers formed an advance guard of the Red Force, and all other Red troops were assumed. The remaining forces of the Panama Canal Department formed the Blue, or defending force. The Air Force of the Canal was assumed to have been destroyed, while the Red Force was effecting the landing, only three O-19 airplanes assigned to the 44th Observation Squadron surviving. They had been forced to occupy an airdrome at LaChorrera.

During the period of maneuvers, all supplies, including gasoline and oil for the Red Ground and Air Forces, were furnished from a base established at the small port of Aguadulce.

The area of the Municipal Airport at Aguadulce was too small for the accommodation of the entire 19th Composite Wing, and a new field, known as Aguadulce No.2, was built within a mile of the old field and occupied by the 16th Pursuit Group. It was found that the P-12E and P-12 airplanes with the Group could be fully serviced in approximately fifty minutes from drums carried on trucks, plus one light duty field servicing truck.

While the Pursuit Group accomplished a number of missions in cooperation with the 25th Bombardment Squadron, the absence of hostile aviation permitted it to be employed in many instances on ground straffing missions to delay the Blue Forces, which were seeking to capture the Red advance guard.

The feature of the maneuvers was the night operations from the newly improvised field at Aguadulce. This is the first time night operations have been conducted in the Panama Canal Department from auxiliary fields. Most of the night work fell to the 25th Bombardment Squadron, but on several missions Pursuit cooperation was required. A feature of the night operations was elements of Pursuit simulating attacks on searchlights in the Panama Bay, which were operating against small boats attempting to land troops to take the defenders in rear.

The field at Aguadulce was lighted by kerosene pots, and two anti-aircraft searchlights were used in lieu of flood lights. The two searchlights were depressed along the edges of the runway for take-offs and landings, and when all airplanes were away from the field one of the lights was used as a beacon. Incidently, it was the only beacon for the entire distance of 120 miles between Aguadulce and the defense installations in Panama Bay.

The planes of the 16th Pursuit Group were flown a total of 468 hours on forty tactical missions, an average of 29 out of 30 airplanes being kept in commission during the maneuver period.

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QUARTERLY TEST OF 90TH ATTACK SQUADRON

The quarterly test of the 90th Attack Squadron, Barksdale Field, La., with full field equipment, was conducted from April 6th to 10th at Natchitoches, La.

The 90th Squadron ground echelon, in company with ground echelons of the 8th and 13th Attack Squadrons, left Barksdale Field at 8:00 a.m., and arrived at Natchitoches two hours later. The weather was threatening when the convoy started, and it was raining by the time the airport at Natchitoches was reached.

The air echelon left Barksdale Field at 11:10 a.m., and flew to its destination in 35 minutes. By that time the camp had been set up and a meal started. The ships were serviced, the plugs on the engine of one of the ships changed, and cockpit and engine covers installed. After the noon meal, the convoy of the 8th and 13th Squadrons left on the return trip.

Despite a low ceiling the next day, three missions were carried out, one in the morning and two in the afternoon. On the morning of the 10th, another mission was flown. Meanwhile, preparations were made to break camp, and the tents were taken down and stowed aboard the motor convoy.

After the flight returned from its mission, a soft ball game was started, the competition being between the officers and enlisted men. The game was stopped at meal time, with the enlisted men ahead by a comfortable margin.

The ground echelon left on the return trip at 1:00 p.m., and the planes left at 2:40 p.m., both arriving at Barksdale Field at about 3:15 p.m.

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Early in the afternoon of April 4th, 30 students of the Air Corps Tactical School, with Majors Smith, Kiel, Captain Huggins and 28 enlisted men, left Maxwell Field for the the gunnery base at Valparaiso,Fla., where the students were assigned aerial gunnery missions. The return flight was made on April 5th.

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PROGRESS AT THE NEW BOLLING FIELD

THE everlasting grading, filling in and levelling work on the site of the new Bolling Field continues, with 900 men making the dirt fly during nearly all the daylight hours. The actual grading is rapidly being completed, and long, broad runways are becoming more and more clearly defined. The entire immense project presents a striking view from the air, with the hundreds of men, tractors and trucks busily at work.

The runways are to be completely paved, making an all-weather field for even the heaviest and fastest airplanes.

Probably the most difficult task confronting the W.P.A. workers is the blasting out of the heavy foundations of the old steel plant at Giesboro Point, in the southwest section of the new area.

Although no flying operations are being conducted from the new field, there is a paved area nearly 800 feet long along the east side of the field which is available in case of emergency. Eventually this strip will be the field apron, along which will stand the field hangars and which will connect with the runway system. No funds have been made available for the construction of hangars.

There is also now in process of construction a new road east of the railroad siding which serves the hangar and fueling area of the field, connecting the various technical buildings of the new military post and communicating with roads into the barracks and quarters area. The work of landscaping the post is also going forward.

The War Department already has spent $2,077,245. on the new Bolling Field,in addition to which some $1,200,000 of W.P.A. funds has been expended or made available. It is estimated that $3,800,000 more will be required to put the field in operation. Some of this has been authorized by Congress, and the final authorization of $606,075 has been included in the $30,000,000 Army construction bill introduced in the House of Representatives by Chairman McSwain of the Military Affairs Committee.

The plan for the new field provides a main runway which eventually may be extended to a length of approximately 5,000 feet. This will make possible full-load take-offs with the largest airplanes so far constructed or designed, and the new field may be the scene of take-offs of planes undertaking distance and endurance records.

The new Bolling Field is to the south of the present Air Corps field, with the Potomac River on one side and the Anacostia hills on the other. The barracks and living quarters are located in the wooded area on the lower slopes of the hills. Although all flying is done from the old Bolling Field, the officers and men now are quartered at the new field in structures which are among the finest of their kind in the Army.

Bolling Field is garrisoned by the 14th Bombardment Squadron, the 21st Observation Squadron and the 100th Service Squadron. Lieut.-Colonel William Ord Ryan, Air Corps, is the Station Complement Commander.

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LIEUT.-COLONEL WILLIAM ORD RYAN

One of but very few officers in the Air Corps who can lay claim to the distinction of twice going through an Army flying training course is Lieut.-Colonel William Ord Ryan, now on duty as Commanding Officer of Bolling Field,D.C. The interval of time between these two flying courses was about twelve years. In the case of Col. Ryan,-and this seems to hold true in the cases of a number of other officers in the service and of individuals in commercial aviation - there is typified the strong appeal aviation holds for the individual once he has entered the flying game.

Col. Ryan was born at San Antonio, Texas, August 10, 1891. He graduated from the U.S. Military Academy in June, 1914, and was commissioned a second lieutenant of Cavalry. He was promoted to 1st Lieutenant of Cavalry on July 1, 1916, and during his career as a Cavalryman he served with the 9th, 7th and 17th regiments.

Applying for and receiving a detail in the Aviation Section, Signal Corps, to undergo flying training, he was sent to the Signal Corps Aviation School at San Diego, Calif., in November, 1916; completed the course of instruction, and received the rating of Junior Military Aviator on May 3, 1917.

From San Diego, Col. Ryan proceeded to Columbus, New Mexico, that little border town which some years ago figured so prominently in newspaper headlines as a result of the surprise raid of the bandit Villa, and which was the station of the 1st Aero Squadron, then commanded by Captain Benjamin D. Foulois. Col. Ryan served with this organization from May 5 to September 12, 1917, and accompanied it when it sailed for duty in France. From September 12 to June 26, 1918, Col. Ryan was in command of the 8th Aviation Instruction Center at Foggia, Italy, in addition to being Officer in Charge of all aviation schools in Italy and of all detachments of American aviation personnel at Italian schools.

Transferred to the Third Aviation Instruction Center in France, he was a stu-

dent officer thereat until July 24th, when he was ordered to the Advanced Aviation Instruction Center at Cazaux, France, for duty as Commanding Officer. On October 31, 1918, he was transferred to the Aerial Gunnery School at St.Jean de Monts, France, for duty as Executive Officer.

Assigned to the American Army of Occupation in Germany in March, 1919, Col. Ryan served with the Air Service, Third Army, at Coblenz. Later he was on duty at several other stations in Germany. Upon his return to the United States and following a brief period of duty in connection with recruiting at Hazelhurst Field, L.I., New York, he was, on August 1, 1919, transferred to the Panama Canal Zone, where he was on duty as Executive Officer of France Field and Commanding Officer of the 7th Aero Squadron until his resignation from the military service, October 5, 1920.

Appointed a Major of Field Artillery, May 17, 1921, he served with this branch of the service until June, 1927, when he was detailed to the Air Corps. During his service with the Field Artillery, he completed the Battery Officers' course at the Field Artillery School in 1922; the advanced course at that school in 1926, and graduated from the Command and General Staff School, Fort Leavenworth, Kansas, in June, 1927.

Upon rejoining the Air Corps, Col. Ryan completed the primary flying course at Brooks Field, and the advanced course at Kelly Field, Texas, receiving the rating of Airplane Pilot on June 25, 1928. On August 16th of that year, he was transferred to the Air Corps.

Assigned to station in New York City, he was on duty with the Organized Reserves, 2nd Corps Area, until July 1, 1929, and at various times served as Acting and Assistant Corps Area Air Officer.

Col. Ryan commanded Mitchel Field, N.Y., from July 1 to September 4, 1929, and was Post Operations Officer thereafter until July 31, 1932, when he was assigned as student at the Air Corps Tactical School at Maxwell Field, Ala. Following his graduation from this School in June, 1933, he remained at Maxwell Field, occupying the position of Post Executive Officer and serving as a member of the Air Corps Board until December, 1935, when he was transferred to Bolling Field, D.C. On January 31,1936, he was assigned to command the Station Complement at that post, with the temporary rank of Lieut.-Colonel. He is now on duty as Commanding Officer thereof.

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During March, the Engineering Department of the San Antonio Air Depot overhauled 20 airplanes and 80 engines, and repaired 17 planes and 20 engines.

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AIR CORPS LEGISLATION

Identical in wording, S. 4309 was introduced in the Senate by Hon. Morris Sheppard, and H.R. 11920 in the House of Representatives by Hon. John J McSwain, the text of which is as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President be, and he is hereby, authorized to call to active duty, with their consent, for periods of not more than five years, such number of Army Air Corps Reserve officers as he may deem necessary, not to exceed one thousand, three hundred and fifty.

Sec. 2. Upon the termination of such a period of active duty of not less than three years in duration, such Air Corps Reserve officers shall be paid a lump sum of $500, which sum shall be in addition to any pay and allowances which they may otherwise be entitled to receive.

Sec. 3. All laws and parts of laws insofar as they are inconsistent with this Act are hereby repealed."

H.R. 11920 was recently passed by the House of Representatives, but was amended by Changing Sec. 3 to Section 6, the three additional sections of the bill reading as follows:

Sec. 3. The sixth proviso of section 2, Act of July 2, 1926 (44 Stat. L.781), is hereby amended by striking out the words "Whenever used in this Act a flying officer in time of peace is defined as one who has received an aeronautical rating as a pilot of service types of aircraft", and by substituting in lieu thereof the following: "A flying officer in time of peace is defined as one who has received an aeronautical rating as a pilot of service types of aircraft or one who has received an aeronautical rating as an aircraft observer: Provided, That in time of peace no one may be rated as an aircraft observer unless he has previously qualified as a pilot: Provided further, That any officer rated as an aircraft observer in time of war must subsequently qualify as a pilot before he can qualify as an observer in time of peace following such war."

Sec. 4. The President is authorized to appoint to temporary rank in the grades of colonel, lieutenant colonel, and major, without vacating their permanent commissions, such numbers of officers of the Regular Army Air Corps as the Secretary of War, from time to time, may determine as necessary to meet the administrative, tactical, technical, and training needs of the Air Corps; the then resulting numbers in each grade, permanent and temporary, to be further increased by 5 per centum to meet the additional needs of the War Department for Air Corps officers: Provided, That such temporary appointments shall be made in order of seniority of the ap-

pointees in each grade in accordance with their standing on the relative rank list of Air Corps officers in their permanent grade, and that when an officer holding a temporary appointment under the provisions of this section becomes entitled to permanent promotion his temporary appointment shall be vacated: Provided further, That all Air Corps officers temporarily advanced in grade take rank in the grade to which temporarily advanced after officers holding such grade through permanent appointment, and among themselves in the order in which they stand on the relative rank list of Air Corps officers in their permanent grade: Provided further, That Air Corps officers temporarily appointed under the provisions of this Act shall be entitled to the pay, flying pay, and allowances pertaining to the grade to which temporarily appointed: And provided further, That no officer holding temporary rank under the provisions of this Act shall be eligible to command outside his own corps except by seniority under his permanent commission.

Sec. 5. The President is hereby authorized, by and with the advice and consent of the Senate, to appoint from among the permanent colonels and lieutenant colonels of the Air Corps who are "flying officers" as defined herein, or as may hereafter be defined, a commanding general of the General Headquarters Air Force with the rank of major general, and such number of wing commanders with the rank of brigadier general as may be determined by the Secretary of War. Officers temporarily appointed under the provisions of this section shall hold such temporary appointments until relieved by order of the President. Such temporary appointments shall not vacate the permanent commissions of the appointees nor create vacancies in the grades in which they are permanently commissioned: Provided, That the provisions of this section shall not be construed to exclude the assignment to Air Corps tactical or other appropriate commands of qualified permanent general officers of the line who are "flying officers" as defined herein, or as may hereafter be defined.

The Senate Bill is now under consideration by the Military Affairs Committee.

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MOSAIC OF SUMMER MANEUVER CAMP

Two members of the 21st Photo Section at Scott Field, Belleville, Ill., 1st Lieut. Kurt M. Landon and Master Sgt. N.G. Loupos, departed in the C-8 Photo plane on April 13th for Camp Custer, Mich., for the purpose of photographing a 20 mile by 30 mile area in order to make a mosaic map for use by the Second Army in this summer's maneuvers. A new five-lens camera, known as the T3A, is being used. This camera photographs approximately 15 square miles at each shot.

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COMMENDABLE CONDUCT OF TWO ENLISTED MEN

The Marmon-Harrington wrecker used by Hamilton Field, Calif., recently caught fire five miles east of Bakersfield, Calif. At great risk to their personal safety, Corporal Harry E. Brosius and Private Lester H. Horning, both of them members of the 70th Service Squadron, extinguished the flames, thereby saving the truck and the majority of the supplies it contained.

"The manner in which Corporal Brosius and Private Horning performed this duty," says the News Letter Correspondent, "is a credit to the 70th Service Squadron." These two enlisted men received special commendation from the 7th Bombardment Group Commander for their attention to duty and excellent judgment.

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MEXICAN ARMY PILOTS VISIT KELLY FIELD

A group of eleven Mexican Army officers, headed by Colonel A.G. Castrejon, and one Sergeant, visited Kelly Field on April 19th. The group, which was on an official flight from Mexico City, landed at Nuevo Laredo on Friday, and were brought to Randolph Field for the week end.

At Kelly Field the visitors were met by the Commandant and Secretary of the Advanced Flying School and were taken on a tour of inspection of the post. They visited the camera obscura range, post operations, and inspected the airplanes in use for training at this school. They departed at noon on a motor return trip to Laredo.

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THE WOODMAN HAS SPARED THIS TREE

The venerable holly tree, mentioned in the previous issue of the News Letter as being moved from its former position on the bank of the Potomac River to a site adjacent to the Officers' Mess at Bolling Field, is now in place. The old tree, aside from being a rare specimen, is exceptionally well developed and contributes not a little to the beauty of the surrounding area. Tradition has it that this tree has been on the river bank since the days of George Washington.

The moving of the holly tree is the largest item in a sweeping campaign of landscaping now being carried on at Bolling Field. Hundreds of shrubs, small trees and flowering plants are being set out over the entire post, with the center of concentration the areas about the new quarters.

BIOGRAPHIES

LIEUT.-COLONEL DAVENPORT JOHNSON, A.C.

Lieut.-Colonel Davenport Johnson, Air Corps, who is nearing the completion of his four-year detail as a member of the War Department General Staff, became affiliated with aviation on February 11, 1916, when, as a 2nd Lieutenant, 19th Infantry, he reported to the Signal Corps Aviation School at San Diego, Calif., for flying training. Following the completion of the flying course he was, on October 16, 1916, rated a Junior Military Aviator.

Col. Johnson was born at Tyler, Texas, March 28, 1890. He graduated from the U.S. Military Academy in 1912, was commissioned a second lieutenant and assigned to the 19th Infantry. He served with this regiment at Fort Sheridan, Ill., from September, 1912, to February, 1913; and at Galveston, Texas, during most of the time from February, 1913, to September, 1915. He was with the regiment from April 16, 1914, to November 15, 1914, during the American occupation of Vera Cruz, Mexico; was attached to the 22nd Infantry at Naco, Arizona, December 15, 1914, to February 1, 1915, and was stationed with the 19th Infantry at Fort Sam Houston, Texas, from September, 1915, to February, 1916.

On September 20, 1916, Col. Johnson was assigned to duty as pilot with the 1st Aero Squadron at Columbus, New Mexico. Eight days later, this organization proceeded into Mexico as a part of the Punitive Expedition under General Pershing. Returning to American territory December 15, 1916, he served at Fort Sam Houston until March 11, 1917. He was then ordered to France to study the methods employed by the French in training their aviation, and arrived in that country on April 5th, just a day before the United States declared war against Germany. While in France he took courses in various French schools of aviation. At his own request, he was assigned to duty with a French Pursuit unit in order to gain a thorough knowledge of the work, and he was one of the first pilots of the American Air Service to perform service at the front. Later, the French Government conferred upon him the Croix de Guerre with bronze star, the citation accompanying same being as follows:

"Highly conscientious officer and of magnificent bravery. Having come for trial in a French escadrille, he has insisted on taking part in all the patrols of that squadron and has besides made a great number of voluntary patrols, thus setting the very best example of enthusiasm and scorn of danger."

Col. Johnson continued his flying activities over the enemy lines until the signing of the Armistice. As Commanding Officer of the 95th Aero Squadron, 1st Pursuit Group, from March to July, 1918, by his knowledge of Pursuit Aviation, by his loyal support of the Group Commander, and by his untiring efforts with his own organization, he was to a great extent responsible for the success of American Pursuit Aviation. He organized and commanded the 2nd Pursuit Group until April 3, 1919, and to his leadership may be attributed the remarkable record of that organization.

On November 5, 1918, while returning from an inspection flight supervising the work of his Group, Col. Johnson saw an Allied plane over the Forest de Woevre being persistently attacked by a patrol of two enemy Fokkers. Well knowing that enemy reinforcements were close at hand, while he was alone and well within the enemy lines with his gas tank low, he did not hesitate to sacrifice himself to enable the Observation plane to escape. He fearlessly attacked the patrol, keeping both enemy planes engaged even after both of his machine guns had become jammed and, after becoming satisfied that the Observation plane had reached the American lines, managed to make his escape after great difficulty.

Col. Johnson's first assignment, following his return to the United States, was as Commanding Officer of the 1st Pursuit Group at Selfridge Field, Mich., from June 9 to August 28, 1919. He then commanded Kelly Field, Texas, to March 1, 1920, when he was transferred to Langley Field, Va. He served as Operations Officer at that field for three months, and then in the capacity of student officer and instructor at the Field Officers School until July, 1922.

Stationed at Mitchel Field, L.I., for the next three years, he commanded the 1st Aero Squadron in addition to performing various other duties. In September, 1925, he was detailed as a student at the Command and General Staff School, Fort Leavenworth, Kansas, and upon his graduation therefrom in June, 1926, returned to Langley Field for duty as Instructor at the Air Corps Tactical School. He attended the Army War College, Washington, D.C., August, 1928, to June, 1929; was on duty in the Training and Operations Division, Office of the Chief of the Air Corps, from July 1, 1929, to February 22, 1930, and then assumed command of the 3rd Attack Group at Fort Crockett, Galveston, Texas. In July, 1932, he was detailed to his present duty as a member of the War Department General Staff, Washington, D.C., in the G-2 Division.

Col. Johnson's flying time has exceeded the 2600-hour mark. He reached the rank of 1st Lieut., July 1, 1916; Captain, May 15, 1917; Major, July 1, 1920, and Lieut.-Colonel, August 1, 1935.

LIEUT.-COLONEL GEORGE H. BRETT, A.C.

A graduate of the Virginia Military Institute in 1909 as Electrical Engineer, Lieut.-Colonel George H. Brett, Air Corps, who was born in Cleveland, Ohio, February 7, 1886, received an appointment on March 10, 1910, as a 2nd Lieutenant of the Philippine Scouts. On August 11, 1911, he was commissioned a 2nd Lieutenant, U.S. Cavalry, and he served in that arm until the latter part of 1915, when he was detailed in the Aviation Section, Signal Corps, for flying training. He qualified for the rating of Junior Military Aviator, received this rating September 2, 1916, and the rating of Military Aviator exactly three years later.

From September 1, 1916, to September 5, 1917, Col. Brett was on duty as aviation representative in the Finance and Supply Divisions, Office of the Chief Signal Officer, Washington, D.C. He was then ordered to duty overseas and performed various functions connected with the purchase, receipt, storage, handling and distribution of all materiel for the Air Service in France. During November and December, 1917, he was on duty at the Headquarters Air Service Lines of Communication, A.E.F. From January 1 to February 27, 1918, he was Assistant Chief of Materiel Division, Supply Section, Air Service, Service of Supply, A.E.F., and then Chief of that Division to the end of July, when he returned to the United States for temporary duty for the purpose of purchasing and collecting materiel necessary for the Air Service. Returning to France on September 23rd, he was on duty for several weeks in the Office of the Chief of Air Service, A.E.F. During November, he commanded several rest camps in England, and then returned to the United States, assuming command of the Aviation General Supply Depot at San Antonio, Texas, on December 21,1918.

On February 24, 1919, Col. Brett became Supply Officer at Kelly Field, Texas. On July 7, 1919, he was assigned to duty as Equipment and Engineering Officer in the Office of the Department Air Service Officer, Southern Department, Fort Sam Houston, Texas.

Transferred to Morrison, Va., October 29, 1919, Col. Brett functioned as Commanding Officer of the Aviation General Supply Depot at that place until December 1, 1919, and then proceeded to Washington, D.C., for duty in the Office of the Director of Air Service, where he served as Chief of the Inventory Section, Property Division, to April 19, 1920; also as Assistant Chief of the Materiel Section to February 11, 1920, and Chief of that section to September 3, 1920. From that date until October 28, 1920, he was Assistant Chief of the Property Division; Acting Chief to February 2, 1921, and Chief of the Property Division to September 30, 1921.

Transferred to Crissy Field, Presidio of San Francisco, Calif., October 6, 1921, Col. Brett was in command of this post until March 2, 1924. During a considerable part of his tour of duty at Crissy Field he also commanded the 91st Observation Squadron, and for brief periods on several occasions he served as Acting Air Officer of the 9th Corps Area.

For the next 3½ years, Col. Brett was on duty as Chief of the Field Service Section, Air Corps, at Fairfield, Ohio. In August, 1927, he was detailed as student at the Air Corps Tactical School at Langley Field, Va. His graduation in June of the following year was followed by further duty as a student at the Command and General Staff School at Fort Leavenworth, Kansas, where he completed the two-year course in June, 1930.

Pursuit aviation claimed Col. Brett's attention during the next three years, when he commanded Selfridge Field, Mt. Clemens, Mich., the station of the First Pursuit Group. In August, 1933, he returned to Fort Leavenworth, Kansas, where for two years he was on duty as Instructor at the Command and General Staff School. In August, 1935, he was assigned to his present duty as a student at the Army War College, Washington, D.C.

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AIR CORPS EXTENDS AID TO FLOOD SUFFERERS

During the recent flood in the State of Pennsylvania, the 2nd Bombardment Group, Air Corps, Langley Field, Va., pursuant to verbal orders of the Commander of the 2nd Wing, prepared to take the field for operations involving the dropping of food and medical supplies to communities in Pennsylvania cut off by floods from ground aid. Forty-five officers and 97 enlisted men were placed on alert status, and a total of 30 airplanes held on the line for take-off.

Major Robert T. Cronau, Air Corps, was placed in command of this detachment and selected the following staff: Captain R.E. Nugent, Adjutant; Captain R.E.L. Choate, Operations; Captain F.E. Glantzberg, Engineering; 1st Lieut. W.H. Higgins, Communications, and Captain D.D. Fisher, Supply. On March 19th, at 3:30 p.m., verbal orders of the Wing Commander directed a flight of eight B-10B airplanes, with necessary personnel, to proceed to Aberdeen Proving Ground, Md., the following day, thence with supplies to be furnished at that point to proceed to Renova, Pa., for the purpose of dropping same to flood sufferers in that community.

All missions were successfully executed, and approximately 8,000 pounds of supplies were dropped.

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OBITUARIES

A distressing airplane accident on the night of April 5th, near Fredericksburg, Pa., resulted in the death of five members of the Air Corps who were stationed at Langley Field, Va., one being a Reserve officer, one a Flying Cadet and three enlisted men.

Second Lieut. Stetson M. Brown, Air Reserve, with Flying Cadet Paul E. Amspaugh, Staff Sergeant Ernest B. Endy, Privates Arthur Samuel Metz and Peter J. Yost, as passengers, took off from Pottstown, Pa., at 7:30 p.m., clearing for Langley Field, Va., and encountered a severe rain storm near Harrisburg, Pa.

Fearing the rain might affect his radio, the pilot attempted to make a landing at both the Middletown and Harrisburg airports, but the recent floods in this section had wiped out all night flying facilities, so he was unable to secure the position of either airport. The crash occurred against the crest of a mountain as he was losing altitude around a beacon in the vicinity of Fredericksburg, Pa.

Lieut. Brown was born at St.Johnsbury, Vt., June 20, 1910. After graduating from the St. Johnsbury Academy he entered Norwich University, Northfield, Vt., and graduated therefrom with the degree of B.S. in Electrical Engineering.

Appointed a Flying Cadet in the Air Corps, he graduated from the Primary Flying School, Randolph Field, Texas,in October, 1934, and from the Advanced Flying School, Kelly Field, Texas, in February, 1935, specializing in Bombardment Aviation and receiving the rating of Airplane Pilot on February 28th.

Assigned for further training under his Cadet status to the 20th Bombardment Squadron, Langley Field, he completed this year of additional training on February 29, 1936, whereupon he was commissioned a second lieutenant in the Air Reserve, and continued on active duty with the above mentioned squadron.

Flying Cadet Amspaugh attended Fenn College, Cleveland, Ohio, from 1928 to 1933, graduating with a degree of Bachelor of Science. He entered the military service in the March, 1934, class at Randolph Field, but due to an accident and a subsequent operation he graduated with the following class in June, 1935. Upon completing the advanced flying course at Kelly Field, he was assigned under his Cadet status to duty at Langley Field and attached to the 37th Attack Squadron, GHQ Air Force, until January 21, 1936, when he was attached to the 36th Pursuit Squadron, GHQ Air Force.

Staff Sergeant Endy was born in Boyertown, Pa., October 28, 1904. He enlisted in the Air Corps on April 3,1926, and served continuously in this branch of the service. He was appointed Corporal in July, 1929; Sergeant in July, 1930, and Staff Sergeant in July, 1931. In 1927 he completed a course of instruction at the Air Corps Technical School at Chanute Field, Rantoul, Ill.

Sergeant Endy served with the 94th Pursuit Squadron at Selfridge Field,Mich., the 2nd Observation Squadron in the Philippines, the 99th Observation Squadron at Mitchel Field, N.Y., and the 20th Bombardment Squadron at Langley Field.

Privates Metz and Yost were also members of the 20th Bombardment Squadron at the time of the accident. The former was born at Chambersburg, Pa., May 7, 1910, and enlisted in the Air Corps November 15, 1928. Previous to his assignment to the 20th Bombardment Squadron, he served for five years with the 59th Service Squadron, Langley Field. Attending the Air Corps Technical School, Chanute Field, in 1931, he graduated as an airplane mechanic.

Private Yost, whose home was at McKees Rock, Pa., entered the military service on October 16, 1933, and was assigned to the 20th Bombardment Squadron. In January, 1935, he graduated from the Air Corps Technical School as Supply and Technical Clerk.

The Air Corps extends its depest sympathy to the relatives of the deceased men.

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ATTACKERS WORK WITH INFANTRY AT FT. MEADE

A flight of three A-8 Attack airplanes from the 37th Attack Squadron, Langley Field, Va., recently flew a contact liaison and attack mission with Infantry and tanks at Fort Meade, Md. The contact plane kept the ground troops well informed as to the positions of the enemy,their strength and threatened objectives.

With clock like precision the flight changed from Attack to Observation and back to Attack as the missions required.

The problem was brought to a close by a dense F.S. smoke laid down by two A-8's which obscured the disputed area. The demonstrations made a favorable impression on the ground troops, who showed much interest in the inspections of the aircraft. Major Ned Schramm, commanding the flight, gave a very interesting talk on the purpose and scope of Attack Aviation. The remaining personnel of the flight assisted in answering the usual questions asked by the ground troops.

This mission was regarded as exceptionally instructive by the participating ground personnel.

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The landscaping project now in progress at Bolling Field, D.C., includes grading, levelling and seeding grass over the unsightly spots left by building operations.

V-7000. A.C.

HOW ENGINES ARE PROCURED AND TESTED FOR AIR CORPS USE

By the Materiel Division Correspondent

PROCUREMENT and type testing of Air Corps engines are accomplished by the Materiel Division at Wright Field, Dayton, Ohio. The test is conducted by the Power Plant Branch. The total running time is 150 hours, and at present is the only official test imposed on models of engines prior to their preparation for service use.

There are three specifications which apply to engines procured by the Army. The first is a General Engine Specification. This pertains to parts that are common to all Air Corps engines, such as generators, starters, gun synchronizer drives, etc. The second is the Type Specification, which applies to all engines of the same type, namely: V-1570, R-1535, R-1820, etc. The last is the Model Specification, and is the one submitted by the engine manufacturer to the airplane manufacturer. This specification is a guarantee of performance of a particular model of engine, and is a basis on which the airplane manufacturer bases his guaranteeded airplane performance.

Let us assume then that an airplane manufacturer has been awarded a contract for a number of planes to be powered by a particular engine. The specification he has submitted for these planes includes the Model Specification of the engine as outlined above. Before the planes are purchased, the engine must satisfactorily pass the 150-hour Air Corps type test at powers in accordance with those outlined in the Model Engine Specification. This test is substantially as follows: The engine is first photographed and weighed. If not already accomplished by the manufacturer, the cylinder and piston ring tensions and measurements are taken. Thermocouples are installed on all cylinder heads and bases. After shop work is completed, the engine is placed on a water brake and electric dynamometer, where accurate measurements of power, manifold pressure, temperature, speed, fuel and oil consumption, can be made. The engine is calibrated and torque stand control data procured. The calibration is a check against the manufacturer's Model Specification guarantee.

The endurance test is run on a torque stand, which is nothing more than a mount, suitable for use with a propeller. The test consists of 150 hours of running in the following manner:

(1) 40 hours of normal rated sea level power at normal rated speed.
(2) 10 hours at critical altitude power and speed.
(3) 25 hours at 97 per cent speed and 91 per cent power.
(4) 25 hours at 93 per cent speed and 80 per cent power.
(5) 25 hours at 89 per cent speed and 70 per cent power.
(6) 15 hours of five-minute periods of alternating take-off power and speed and idling.
(7) 10 hours at rated power and 110 per cent speed.
(8) 10 dive tests of 20 seconds each at 105, 110, 115, 120 per cent normal rated speed; and, in addition, for engines to be used in Pursuit ships, at 125 and 130 per cent normal rated speed. All dive tests are run at normal rated manifold pressure.

During the test, readings of manifold pressure, speed, cylinder temperature, fuel and oil consumption, are recorded at fifteen-minute periods. In the event of a failure of a major part, a new part may be installed and the test continued with the new part being subjected to a penalty run equal to the time covered by the engine prior to failure.

Upon the completion of the endurance test, the engine is returned to the dynamometer, where it is re-checked for power, to determine the power change during the endurance test. After calibration, the engine is completely disassembled and inspected. Each part is gone over carefully to disclose any cracks, scuffs, or other signs of excessive wear. Measurements are taken of rings and cylinders and checked against those made prior to test.

If all is considered satisfactory, the engine is approved.

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ASST. SECRETARY OF WAR FLIES IN PANAMA

During his recent inspection and visit to the Panama Canal Department, the Hon. Harry H. Woodring, Assistant Secretary of War, and his party, were on March 28th flown in an OA-3 Amphibian plane from Albrook Field to Puerto Aemuelles, Republic of Panama. Captain C.A. Ross, of Albrook Field, was the pilot. The OA-3 was escorted by two O-19 airplanes piloted by Lieut.-Colonel Donald P. Muse, of Albrook Field, and Lieut. George G. Northrup, of France Field.

Puerto Aemuelles is located just south of the Panama-Costa Rica border on the Pacific Coast line. There is a large banana plantation located here, owned and operated by the United Fruit Co. Upon arrival, Secretary Woodring and his party were taken on an inspection tour of the plantation, where the method of cutting, carrying and loading of bananas was demonstrated. The party were guests of Mr. Blair, manager of the plantation, for lunch, and returned to Albrook Field in the afternoon.

NAVIGATION AIDS IN B-10 AND B-12 AIRPLANES

By Captain Norris B. Harbold, Air Corps

SINCE the 19th Bombardment Group was assigned the mission of adapting existing equipment to celestial navigation, and since this Group was equipped with B-10 airplanes, considerable thought and effort have been devoted to the installation of navigation equipment in this type airplane.

In the installation of additional equipment or in adapting existing equipment, no changes were made in basic arrangement or function of the airplane, and installations do not interfere with the armament or controls of the airplane. These changes, as made, are considered adaptable to B-12 and B-10B airplanes and do not require special materials nor tools and can be effected by a service squadron.

In any navigation, dead reckoning is basic, and it was in providing instruments for dead reckoning that most difficulties were encountered. The equipment deemed necessary for dead reckoning consisted of the following: Aperiodic Compass, Type D-4; Turn Indicator, Type B-2, with remote control; Drift Sight; Navigation Table and seat; and Navigation Case.

Proper compass installation was the hardest problem. Installation near the fuselage side in the rear cockpit developed strange unpredictable deviations believed caused by magnetization of rudder cables and by vibration. The compass was finally installed on the floor on a square base mounted on four Lourd shock absorbers of 4-lb. size.

The B-2 Type Turn Indicator is the only type permitting remote control of the lubber line. Only a few B-2 Turn Indicators were available, but those installed required a 20 ft. length of flexible shaft to permit installation of the remote control knob near the compass. In those airplanes not having a B-2 Turn Indicator, voice communication (interphone) is used to direct the pilot to the proper heading.

A D1-A drift sight was installed on the right side of the rear cockpit. Several places were tried, the best being that which was accessible to the navigator when seated and which kept the mechanism which turns the grid inside the fuselage. The installation did not interfere with the controls.

It was found possible to obtain excellent drift reading with the bomb sight even at altitudes of 5,000 to 8,000 feet over smooth water. This required practice, however, and focussing of the eye by means of fairly long observation. No great success has yet been obtained in securing ground speed readings with this sight. The bomb sight pilot director has also been used for navigation purposes. Although some precession was encountered, this method may develop into an easier and better means of pilot direction than by the gyro turn indicator.

A small folding table equipped with an Aircraft Protractor (small universal drafting machine) was installed on brackets placed on the rudder heel rests in the rear cockpit. This installation likewise did not interfere with the controls and can be removed and placed to one side, permitting free passage under the control column in the rear cockpit.

The seat provided in the rear cockpit of the B-10 airplane was found to be highly magnetic and to have considerable effect upon the compass when down. This seat was also too high to be used with desk or the compass as installed. Consequently, a small, folding, wooden bench was built which mounts 19 inches off the floor of the rear cockpit. This seat may be folded and placed on the floor when not in use. The metal seat installed in the airplane can still be used when necessary.

A number of Navigation Instrument Cases equipped with necessary instruments and paraphernalia have been tried. The adaption of a standard case suitable for any multi-place airplane has been recommended. This case consists basically of a separate kit, 10" x 12", with suitable exposed pockets for dividers, pencils, computers, etc., and an ordinary brief case. All books, tables, forms, and maps not in use can be placed in the brief case while the small kit can be hung up in some convenient place and be readily available to the navigator.

The aircraft protractor mentioned in conjunction with the folding table has been found indispensable for dead reckoning and celestial plotting. The type in use is the aircraft navigation protractor, Elgin, Part No. E-6280. However, any type of small universal drafting machines with arms 8 to 12 inches long, with 360° protractor head and blank scale (preferable), can be used. A protractor of this kind facilitates the work of plotting considerably.

A shallow aluminum box should be provided for the aircraft sextant. This box can be mounted on the fuselage side in some convenient location available to the navigator. This box should be secure and should be lined with felt rubber. If the A-6 type navigation watch is used, a similar box should be provided; however, the wrist type A-7 is considered sufficiently reliable for missions of duration of range of present aircraft and requires no box, as it is carried on the person.

Since the bomb sight installation has been changed to the nose in these air-

(Continued on page 16)

QUESTIONS AND ANSWERS

Q. Why should Air Corps officers on flying duty receive extra pay?

A. In answering this question people outside the Air Corps, who do not fly, usually assign as the reason the hazardous nature of the duty, involving increased risk to life over and above that of other peace time Army occupations. Air Corps fliers probably think first of another reason. They feel that the extra pay is, in part, compensation for special ability to do that which the great majority of people are unable to do. The Army's requirements for physical fitness to take flight training eliminate about eighty percent of all who apply for it. The flight training itself eliminates fifty percent of those who take the training; so that only ten percent of those who want to fly in the Army qualify as pilots. It is natural, therefore, for Army pilots to feel that they are specialists of a rather high order. Perhaps they might be compared in this respect with major league baseball players or even Hollywood movie stars. They are able to do something most of the other folks cannot do; and since this special ability is needed by the country it is only fair that it should be paid for.

Of course, Air Corps fliers recognize the hazards of flying and the need to make special provision for their families. This provision involves greatly increased outlay on their part for insurance, since insurance companies charge high extra premiums for covering the aviation risk. The extra pay is needed to defray this added expense to fliers.

Some reviewers who have studied this subject have arrived at the conclusion that flying is growing safer year by year, as proven by the fatality records, and that for this reason the amount of extra pay should be reduced. This is only partially true as regards Army flying. It is true that more hours are flown for each fatality. However, a great many more hours of flying per officer are required, and because of this the percentage of fatalities among Air Corps officers remains about the same. Other factors these reviewers have failed to evaluate are the high type of pilot ability and the splendid morale of the fliers who have made this improved safety a reality. The extra pay undoubtedly plays a significant part in attracting to the flying profession the present high type of men who are engaged in Army, Navy and air lines flying. And it is these fliers who have piled up the huge total hours of flying which is directly responsible for contributing the flying proficiency and the advance in structural integrity and reliability of equipment which has made possible improved safety.

In flying one of the large, costly modern airplanes the individual actions of the pilot are completely responsible for the safety of the whole craft to a degree which does not obtain in the operation of any similar surface craft. It is true economy, therefore, to have a highly competent pilot. And competency in such a specialized calling deserves an appropriate reward in the matter of salary. The air lines have recognized this and require the pilots of their large airplanes to have a minimum of one thousand hours flying time; and they pay them higher salaries than Air Corps pilots receive. A comparison made on data only partially complete for air line pilots, but believed to be fairly representative, gives an average monthly pay for airline pilots of $569.68 per month as opposed to an average pay, including flying pay, for Air Corps pilots of $391.70 per month.

When it is considered that Air Corps pilots are trained to fly in close formations, to carry high explosives in their airplanes, to practice very low and very high flying, to fly over unmarked and unlighted courses at night, and, in general, to obtain the absolute maximum of performance from their airplanes in order to cope on favorable terms with their opponents in war, it is believed the question of their extra flying pay is largely answered.

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LIGHT PLANE TESTED AT BOLLING FIELD

The Bureau of Air Commerce, Department of Commerce, has been conducting exhaustive tests at Bolling Field, D.C., on the new Hammond "Y" light airplane, built by the Hammond Aircraft Company of Tysilami, Mich., for the "flivver plane" project being sponsored by the Bureau.

The new ship, of unique design, is of the pusher type, two place, and is powered by a 125 H.P. Menasco in-line engine. Cooling is accomplished by an efficient tunnel cowl, and with the power plant now used the ship cruises at nearly 100 miles per hour. The landing speed, with flaps down, is reported as practically nil, and landing and take-off runs are surprisingly short. The Bureau of Air Commerce hangar crews, who nurse the little ship, are enthusiastic.

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Selfridge Field, Mich., was honored by a visit from Major-General Frank M.Andrews, Chief of the GHQ Air Force, who arrived on the afternoon of April 7th from Langley Field, Va. After an inspection of post activities, the General departed for Wright Field, Dayton, Ohio, on the afternoon of April 8th.

Navigation Aids (Continued from page 14)

planes, it is no longer possible for the navigator to function as bomber. If three of the crew are officers, bomber, pilot, and navigator, no difficulties are encountered. However, if the officer crew is reduced to two, with the compass in the rear, the enlisted crew man must be instructed in setting the compass as directed by the navigator and in keeping the pilot on the proper heading by means of the remote control or by voice (inter-phone). This has not proven altogether reliable, but is the only means possible without a fully trained crew. With a trained enlisted bomber, no difficulties are encountered, as the navigator can be an officer.

To provide emergency communication between the radio operator, or navigator and the pilot, a pulley system was installed so that written communication could be maintained between these stations.

One of the plasticelle panels in each side of the rear cockpit enclosure was removed and glass inserted. This was done to permit better vision when taking celestial observations. Refraction errors due to the glass or plasticelle may or may not be present, but the error due to this refraction is not considered sufficient to disturb the accuracy possible from air observations.

Compass compensation in the B-10 airplane presented many difficulties. The effect of retractable wheels, radio, and the weight and size of the airplane made ground compensation difficult and not in conformance with conditions of flight. Swinging in the air was therefore tried with good results. However, in this swinging, the dynamotor for the radio set in the rear of the B-10 was turned off when readings were made in flight.

This air swinging consists basically of determining the sun azimuths at predetermined times and aligning the airplane in flight with these azimuths by shadows. The airplane is then turned to the magnetic headings by reference to the gyro and the compass readings taken. Compensation by magnets is not performed. The deviations are determined by drawing a mean curve for the headings as determined in flight, and a deviation card made. The use of magnets was impracticable, and deviations as determined did not exceed four degrees. Before air swinging, the lubber line error was removed by swinging on the ground. Detailed instructions on air compensation are being prepared and will be submitted for approval and publication as a T.O. or for inclusion in the navigation text.

Naturally, this adaptation of equipment and the method of air swinging is not final nor perfect, but it does represent considerable thought and effort already expended and should prove a basis for further development. This installation is fairly comfortable, and the results obtained have been gratifying.

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STUCK IN THE MUD HEAD FIRST

Lieut. William J. Bell, on duty with the 1st Pursuit Group at Selfridge Field, Mt. Clemens, Mich., was the victim of a peculiar accident on April Fools' Day. While making a return flight from Chicago, he encountered a local storm near Jackson, Mich., and, after endeavoring to push through it for several minutes, decided to return to the Jackson airport and land. After turning, his engine dropped to about 1400 r.p.m., at full throttle, and the air speed fell to about 110 miles per hour. This caused him to decide to land in the first available field.

Selecting a field near the Jackson Prison which appeared to be level and firm, he made a landing and, after rolling but a few feet, the plane flopped over on its back in the soft mud. The edges of the cockpit were on the ground, and the entire headrest sank in the mud, with the result that Lieut. Bell was imprisoned in the cockpit upside down.

Following about ten minutes of effort, Lieut. Bell was able to remove his parachute and turn around in the cockpit so that he was upright and on hands and knees. He remained in this position about ten more minutes until several farmers passing on the nearby road came to his assistance and lifted the tail of the plane sufficiently to permit him to crawl out.

Due to the softness of the ground, the damage to the airplane was not as great as was expected, and the airplane has been shipped to the Fairfield Air Depot for overhaul.

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POST EXCHANGED MOVED TO NEW BOLLING FIELD

The Post Exchange and Restaurant at Bolling Field, D.C., were recently moved to new, spacious quarters in the gymnasium building on the new field area. The new location constitutes a vast improvement over the older cramped building formerly occupied. Along with the change in location, the restaurant is being splendidly equipped with the latest type of fixtures and will soon be in a position to offer the finest type of service.

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Twenty-three PB-2A airplanes are to be delivered to the 1st Pursuit Group at Selfridge Field, Mich., in the next six weeks from the Consolidated Aircraft Corporation, San Diego, Calif. Four ferry pilots have already departed for San Diego to accept delivery of these planes. The Group will be equipped with approximately 75 Pursuit planes upon delivery of these new planes.

AIR CORPS MAY SECURE ADDITIONAL OFFICERS

IN Circular No. 20, War Department, April 10, 1936, announcement is made that, provided funds are made available under the current War Department appropriation act, there will be an examination of applicants for the appointment of 50 second lieutenants in the Air Corps, Regular Army.

Although fifty appointments, apportioned to the various arms, are authorized to be made annually, the entire allotment of 50 vacancies is awarded to the Air Corps for this year, since none of the group of 1,000 Reserve officers authorized for active duty for one year with the Regular Army could be eligible for appointment prior to July 1, 1937.

These fifty appointments are limited to graduates of the Air Corps Training Center only. Applications from graduates now in active military service and from those Flying Cadets who will graduate from the Air Corps Training Center on June 30, 1936, should be submitted to the Corps Area and Department Commanders through channels, in accordance with Section III, AR 605-5, not later than May 15, 1936. Candidates not now in active service will submit their applications to the station at which they last served. A candidate who has had no extended active duty with the Air Corps should submit his application to the Commandant of the Air Corps Training Center.

The preliminary examination of candidates is to be completed not later than July 1, 1936. Part I of the final examination is to begin July 27th, and part II, July 30, 1936. Eligibility to compete in the final examinations will be confined to qualified pilots who -

a. Fulfill the necessary mental, moral and physical qualifications for appointment as second lieutenants in the Regular Army.

b. Are physically qualified for flying duty, and

c. Have not reached the age of 29 years and 9 months at time of final examination.

The final mental examination will be divided into Part I, which consists of elementary subjects, and Part II which consists of advanced subjects. Each candidate will be required to qualify either by examination or by an approved exemption in all subjects of Part I, as prescribed in paragraph 34b, AR 605-5. Each candidate will be required to qualify by examination in all subjects of Part II. No exemptions in Part II will be granted for any cause. The subjects of Part I will be those listed in paragraph 34b, AR 605-5. The subjects of Part II will be -

(1) Theory of flight
(2) Internal combustion engines
(3) Air Navigation, excluding celestial.

The scope of the examination in the subjects of Part II will be as follows:

(1) Theory of flight,- as covered by "Simple Aerodynamics" by Montieth and Carter, and those texts used at the Air Corps Training Center, or any other recognized textbook of equivalent standard.

(2) Internal Combustion Engines,- as covered by "The Airplane and its Engine" by Chatfield and Taylor, and those texts used at the Air Corps Training Center, or any other recognized textbook of equivalent standard.

(3) Air Navigation,- as covered by "Avigation" by Holland, and those texts used at the Air Corps Training Center, or any other recognized textbook of equivalent standard, excluding celestial navigation.

In each examination the candidate will require a fundamental knowledge of the principles of the subject sufficient to indicate his suitability as an officer of the Air Corps. A general average of 75 will be required in all subjects and a mark of not less than 65 in any one subject.

Candidates who are physically qualified and who attain the marks prescribed will be arranged on an eligible list in the order of their general averages. They will be selected from this list for appointment and placed on the promotion list arranged among themselves according to their prior active Federal commissioned service in the Army.

The purpose of this examination is to select the 50 best qualified applicants for appointment in the Air Corps, Regular Army. No additional credits for length of flying service are awarded and no priority in appointment will be granted to any graduate of the Air Corps Training Center by reason of enlisted or other status.

All applicants who are not in the active military service at the time of making application for examination will be required to demonstrate their proficiency as pilots before the board conducting the preliminary examination. Each examining board will submit a report showing the relative merit of these candidates as pilots.

RETIREMENT OF NONCOMMISSIONED OFFICERS

The following Noncommissioned officers of the Air Corps will be retired, effective April 30, 1936:

Warrant Officer Walter M. Phelps, Scott Field, Ill., after more than 32 years' service.

Master Sgt. Charles Feyk, 1st Bombardment Squadron, Mitchel Field, N.Y.

Master Sgt. Fred Carducci, 14th Photo Section, Mitchel Field, N.Y.

First Sgt. Ralph Baumgardner, 27th Pursuit Squadron, Selfridge Field, Mich.

CHANGES OF STATION OF AIR CORPS OFFICERS

To Office Chief of Air Corps, Washington: Major Robert Kauch, from Brooks Field, Texas.

To Randolph Field, Texas: Major Warner B. Gates and Lieut.-Col. William B. Mayer (Maj.) for primary flying training, upon completion of tour of duty in Panama.

To Rockwell Field, Calif.: Captain Russell J. Minty, from Wright Field, Dayton, Ohio.

Promotions:

Lieut.-Colonel Barton K. Yount to Colonel, and Captain Shiras A. Blair to Major, both to rank from April 1, 1936.

Change in Name

First Lieut. Robert Alan Stunkard to Robert Alan.

Retirement:

Colonel Ira Longanecker, April 30, 1936, for disability incident to the service.

Temporary Promotions:

To Captain

1st Lieut. Frederick W. Ott assigned as flight commander, 25th Bombardment Squadron, France Field, Panama Canal Zone, April 22, 1936.

1st Lieut. Chester P. Gilger assigned as supply officer, 65th Service Squadron, Luke Field, T.H., April 24, 1936.

1st Lieut. Harry G. Montgomery, Jr., assigned as flight commander, 32nd Bombardment Sqdn., March Field, Calif., April 28, 1936.

To 1st Lieutenant:

2nd Lieut. Frank N. Moyers assigned as Engineering Officer, 8th Attack Squadron, Barksdale Field, La., April 26, 1936.

2nd Lieut. Earl F. Signer assigned as supply officer, 4th Observation Squadron, Luke Field, T.H., April 24, 1936.

2nd Lieut. Cordes F. Tiemann assigned as armament officer, 50th Observation Squadron, Luke Field, T.H., April 24, 1936.

2nd Lieut. Jewell B. Shields assigned as supply officer, 19th Pursuit Squadron, Wheeler Field, T.H., April 22, 1936.

2nd Lieut. Sydney D. Grubbs, Jr., assigned as communications officer, 19th Pursuit Squadron, Wheeler Field, T.H., April 22, 1936.

2nd Lieut. Karl Truesdell, Jr., assigned as communications officer, 6th Pursuit Squadron, Wheeler Field, T.H., April 22, 1936.

2nd Lieut. Opal E. Henderson assigned as Adjutant, 18th Pursuit Group, Wheeler Field, T.H., May 1, 1936.

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The duties of the following-named Air Corps officers holding temporary increased rank were changed, these officers retaining their temporary rank. No change of station involved.

Major Walter Miller (Captain) from Executive Officer to Supply Officer, Air Corps Primary Flying School, Randolph Field, April 27, 1936.

Major Leonidas L. Koontz (Captain) from Supply Officer to Executive Officer, Air Corps Primary Flying School, Randolph Field, April 27, 1936.

1st Lieut. Thomas S. Moorman, Jr. (2nd Lt.) from supply officer, 4th Observation Squadron, Luke Field, T.H., to Communications Officer of that squadron.

THE COVER PAGE FOR THIS ISSUE OF NEWS LETTER

Featuring this issue of the News Letter is the first photograph ever made showing the division between the Troposphere and the Stratosphere and also the actual curvature of the earth. The area shown in this photograph, taken from an elevation of 72,395 feet, the highest point ever reached by man, is larger than the State of Indiana.

From its vantage point far up in the stratosphere, the camera has registered the horizon 330 miles away, sweeping like a great arch across the photograph. The straight black line has been ruled in to bring out clearly the curvature of this horizon, which is practically concentric with the earth's surface, and thus indicates the actual curvature of the earth.

This remarkable picture is most interesting to scientists as the first photograph yet secured showing the boundary between the troposphere (the dust-laden region of rising and descending air currents, of clouds and variable temperature) and the stratosphere (the region of nearly constant temperature, above dust and air turbulence).

The abrupt change from light to dark on the horizon marks the top of the "dust sphere," the meeting surface or boundary between the lower air (troposphere) and the stratosphere. Its height varies with the season, with the latitude and with weather conditions. On Nov. 11, 1935, over South Dakota, where this photograph was taken, this dust arc was approximately 37,000 feet above sea level. Although rising air currents are unable to penetrate this lower boundary to the stratosphere and to carry dust into it, volcanic eruptions have on rare occasions shot dust to tremendously greater heights.

The significance of the photograph is that both the camera and the target (the top of the "dust sphere") are in the stratosphere, that is, the line of sight is wholly through the stratosphere, 96% of the earth's atmosphere being below the camera when this picture was made. With only 4% of the earth's atmosphere above this height, and that essentially free from dust, there is little to scatter sunlight; consequently the upper sky is very dark.

The Big Horn Mountains of Wyoming and Montana, with patches of snow and dark forest, can be seen faintly near the horizon. The long, dark area in the middle ground is the Black Hills of South Dakota, more than 100 miles long, and from 120 to 180 miles away. The forest that covers the region gives the dark color and so camouflages its mountains that they are not distinguishable as such. The nearest objects in the foreground are more than 30 miles away. This picture shows more than the human eye saw. To the eyes of the balloonists the horizon was not clearly distinguishable. The earth and sky merged together in a band of white haze.

The News Letter greatly appreciates the courtesy of the National Geographic Society in granting permission to use this photograph. The rotorpress plate therefor was made at the Materiel Division, Wright Field. Mr. Bob Fitzgerald, of the Army Aeronautical Museum, took several liberties with the photograph, such as adding inserts of Captains Stevens and Anderson, also the stratosphere balloon. Our cordial thanks to all who had a hand in producing the cover for this issue.

V-7000, A.C.